



**Makai Ocean
Engineering, Inc.**

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Makai Ocean Engineering, Inc. provides ocean engineering services worldwide and is a major supplier of submarine cable installation and planning software. Makai provides multiple facets of engineering analysis and software development to in-situ testing at its research pier.

Makai employs people who have the experience, education, and attitudes needed for success in the demanding ocean environment.

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SBIR Investment: \$725K

Non-SBIR Investment: \$600K

Near Real Time Installation of Cables and Sensor Arrays Deployed from a Towed Body



About the Technology

The ability to simulate, monitor, and control complex at-sea cable and array installations from a towed body has been a costly problem to Navy and commercial ventures. The technology to solve this problem has been developed by Makai through its element location prediction (ELP) model. The ELP computes the position of the submarine relative to a very lightweight array deployed from an underwater towed body. Through numerical and computational evaluations of input data from deployed instrumentation, the ELP enables the cables to be laid accurately and straight, using relatively low-skilled personnel.

Benefits to SPAWAR and other DOD Programs

The Navy's computer model was slow, complicated to use, and costly. Makai has developed a more rigorous program that is faster, more accurate, provides useful solutions, is easy to use, and has the ability to operate on a standard PC. Makai provides SPAWAR and the Navy with the only model that achieves all of the desired technical requirements.

Why Makai's Model Improves the Technology

- Improved array element placement accuracy
- 150 times faster than current Navy software
- PC compatible
- Low skill-level operator requirements
- Immediate access to deployed array
- More cost efficient

Military and Commercial Significance

- The military version of this technology is being used on ASW training ranges and in SPAWAR's Advanced Deployable System (ADS) program.
- Makai also developed two commercial products based on this technology: MakaiPlan Pro and MakaiLay. They are being used by several telecommunication companies in the planning and real-time control installation of submarine cables from surface vessels. There are also some commercial geo-technical surveying applications.
- Makai received a \$100K award from the National Defense Center of Excellence for its innovative research in ocean science related to this project.

